Pharmaceuticals and our Environment

State of Maine
Department of Environmental Protection

Commissioner David P. Littell

November 10, 2008

Welcome to Maine

6,000 lakes and ponds

32,000 miles of rivers and streams

5300 miles of coastline; one of the longest in the continental U.S.

Nearly 90% forested; most heavily forested state in the continental US.

Home to about 20% of the nation's intact brook trout populations and primary steward of 97% of the wild brook trout in large lakes in the eastern US.

Maine has Great Water

95% of Maine waters meet their Clean Water Act designated uses.

98% of our rivers and streams are well above Clean Water Act minimum standards.


But still have fish advisories
All of the waters of the state are under fish advisories for mercury
Three rivers in northern Maine remain under fish advisories for DDT that was banned in Maine four decades ago.

Historically the regulatory community has monitored industrial and criteria pollutants discharged to the aquatic environment.

New analytical methodologies over the last few years have increased detection sensitivity and expanded the scope of what can be found.

Pharmaceuticals and their metabolites enter the land and water and through excretion by humans and animals, sludge application, washing of externally applied pharmaceuticals, and through flushing or land disposal of unwanted medications.

Drugs are designed to be biologically active. May have detrimental impacts on non-target organisms at very low concentrations.

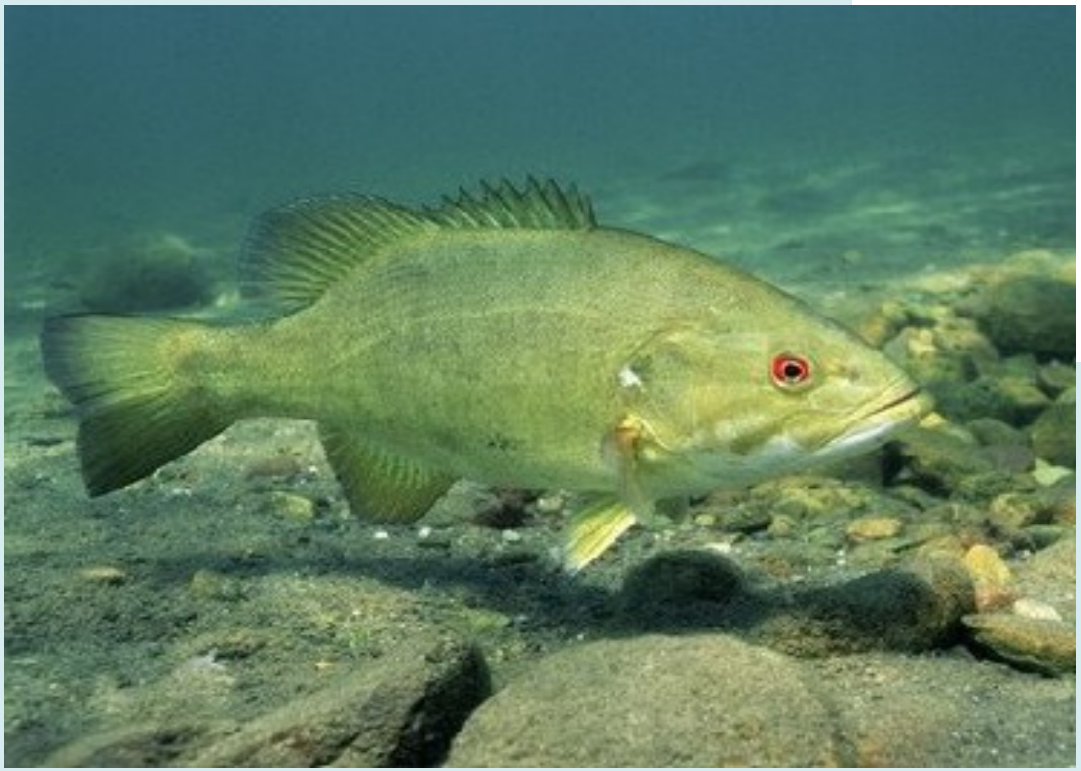
There are literally thousands of drugs on the market. In the US the increasing number of prescriptions, expanding drug uses, an aging population and a host of other factors are contributing to a dramatic rise in drug sales each year. The US accounts for approximately half the worldwide sales of ethical pharmaceuticals, including veterinary and over-the-counter sales.[1]

[1] PhARMA, Industry Profile

Quantities of drugs entering the environment are only one factor.

How rapidly a drug is metabolized **(impacts excretion rates), how rapidly it** ***degrades in the environment*****, and the** ***toxicity of the drug*** **or its metabolites are a few of the other factors that will determine environmental effect.**

Little is known about the additive and synergistic effects of continual, long-term exposure on non-target aquatic organisms.



Wastewater treatment plants are not designed to remove residuals of pharmaceuticals before discharge.

USGS found worms bioaccumulate pharmaceuticals from sewage sludge that is land spread.

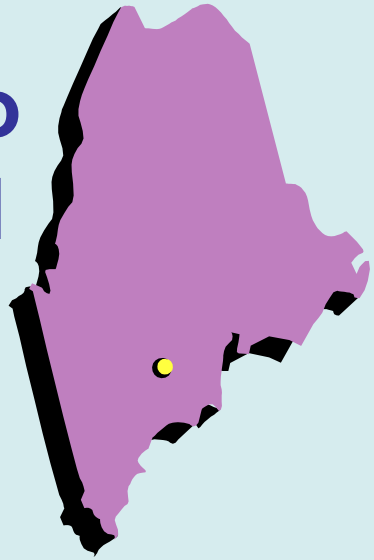
Product Stewardship

Product Stewardship is a principle that directs all participants in the life cycle of a product to take shared responsibility for the impacts to human health and the environment from the production, use, and end-of-life management of the product.

Product Stewardship programs can lessen the burden on government to manage a problem, and lead to innovation, cost savings and environmental and human health protection.

Maine is a leader in implementing product stewardship programs

- Maine DEP implements multiple Product Stewardship programs to reduce environmental, health and disposal concerns



- Requires recycling mercury auto switches, TVs and computer monitors, and mercury thermostats.

Public concern

In a recent Maine collection event -

“ One little boy who was about 7 or 8 said his grandmother died several months ago. He didn’t want the medicine to hurt the environment”

Christine Lecter Healthy Androscoggin of Lewiston Oct 2008
Pharmaceutical Take Back

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